

ABSTRACT

The present invention is provided to a method of manufacturing a flash memory, comprising the steps of: performing an ion implantation process for adjusting a threshold voltage on a semiconductor substrate; forming a tunnel oxide film, a first polysilicon film and a pad oxide film on the semiconductor substrate, sequentially; etching the pad oxide film, the first polysilicon film, the tunnel oxide film and the semiconductor substrate to form a trench defining an active region and a device isolation region; forming a side wall oxide film on the side wall of the trench while suppressing diffusion of the implanted ion for adjusting the threshold voltage into the device isolation region to the maximum extent; performing an ion implantation process on the side wall of the trench and the active region adjacent to the device isolation region in order to compensate for ions for adjusting a threshold voltage which have diffused from the active region into the side wall oxide film; and forming a device isolation film by filling up inside the trench.

According to the present invention, it is possible to improve electrical characteristics of a device by making the ion density of the active region on which ions for adjusting a threshold voltage are implanted uniform through an oxidation process for forming a side wall oxide film of the trench 110 to be performed at a temperature lower than that of the conventional method, and an ion implantation process for compensating for ions diffused into the side wall oxide film during the oxidation process.